FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

PORTABLE TOUCHSCREEN NAVIGATION SYSTEM AND A/V MEDIA PLAYER

Model: GPS-910XX(X=A-Z or Blank)

Trade Name: harman / kardon

Issued to

Kinpo Electronics, Inc.
147, SEC. 3, BEISHEN RD., SHENKENG SHIANG,
TAIPEI, TAIWAN, (222) R.O.C.

Issued by

Compliance Certification Services Inc.
No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang,
Taoyuan Hsien, (338) Taiwan, R.O.C.
http://www.ccsemc.com.tw
service@tw.ccsemc.com

ACCREDITED
TESTING CERT #0824.01

Testing Laboratory
0363

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION

Applicant:	Kinpo Electronics, Inc. 147, SEC. 3, BEISHEN RD., SHENKENG SHIANG, TAIPEI, TAIWAN, (222) R.O.C.
Equipment Under Test:	PORTABLE TOUCHSCREEN NAVIGATION SYSTEM AND A/V MEDIA PLAYER
Trade Name:	harman / kardon
Model:	GPS-910XX(X=A-Z or Blank)
Date of Test:	March 8 ~ 20, 2008

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.239.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Amanda Wu
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	PORTABLE TOUCHSCREEN NAVIGATION SYSTEM AND A/V MEDIA PLAYER
Trade Name	harman / kardon
Model	GPS-910XX(X=A-Z or Blank)
Model Discrepancy	All the specification and layout are identical except they come with different model numbers for marketing purposes.
Power Supply	1. Power Adapter: PHIHONG Model: PSA105R-050Q I/P: 100-240VAC, 50-60Hz, 0.3A O/P: 5VDC, 1A 2. Car Charger ACMELUX Model: GPS810 I/P: 10-24VDC, 1.0A O/P: 5VDC, 1.5A
Operate Frequency	88.1~107.9 MHz
Number of Channels	199 Channels
Channel Spacing	100kHz
Transmit Power	44.59 dBuV/m
Modulation Technique	FM

Remark:

1. *The sample selected for test was production product and was provided by manufacturer.*
2. *The product is a Transmitter. This submittal(s) (test report) is intended for* ***FCC ID: ESNGPS-NEWPORT*** *filing to comply with Section 15.239 of the FCC Part 15 Subpart C Rules.*

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 (2003) and FCC CFR 47 Part 15 Subpart C.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions

The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 - 13.41	322 - 335.4		

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.5 DESCRIPTION OF TEST MODES

The EUT (model: GPS-910NA) had been tested under operating condition.

The tuning controls were manually adjusted to verify maximum tuning range.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

Channel Low (88.1 MHz)、Mid (98 MHz) and High (107.9 MHz) was chosen for full testing.

Execute FM program and play MP3 songs from SD Card during the20%BW test and the volume of audio was tuned to the max.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year.*

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/29/2009
Power Meter	Agilent	E4416A	GB41291611	03/19/2009
Power Sensor	Agilent	E9327A	US40441097	05/07/2008

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	08/01/2008
Test Receiver	Rohde&Schwarz	ESCI	100064	11/03/2008
Switch Controller	TRC	Switch Controller	SC94050010	05/04/2008
4 Port Switch	TRC	4 Port Switch	SC94050020	05/04/2008
Horn-Antenna	TRC	HA-0502	06	06/05/2008
Horn-Antenna	TRC	HA-0801	04	05/04/2008
Horn-Antenna	TRC	HA-1201A	01	07/09/2008
Horn-Antenna	TRC	HA-1301A	01	07/17/2008
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/07/2009
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC: 965860 IC: IC 6106	09/25/2008
Test S/W	LABVIEW (V 6.1)			

Remark: *The measurement uncertainty is less than +/-2.0065dB (30MHz ~ 1GHz), +/-3.0958dB (Above 1GHz) which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Powerline Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	10/30/2008
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/13/2008
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	03/19/2008
Test S/W	LABVIEW (V 6.1)			

Remark: *The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

5. FACILITES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☒ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, IEC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/ EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001	ACCREDITED TESTING CERT #0824.01
USA	FCC	3/10 meter Open Area Test Sites (93105, 90471) / 3M Semi Anechoic Chamber (965860) to perform FCC Part 15/18 measurements	93105, 90471 965860
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	VCCI R-393/1066/725/879 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	ELA 124a ELA 124b ELA 124c
Taiwan	TAF	EN 300 328, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3	TAF Testing Laboratory 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 SL2-IN-E-0014 SL2-A1-E-0014 SL2-R1-E-0014 SL2-R2-E-0014 SL2-L1-E-0014
Canada	Industry Canada	3/10 meter Open Area Test Sites (IC 2324C-3, IC 2324C-5) / 3M Semi Anechoic Chamber (IC 6106)	Canada IC 2324C-3 IC 2324C-5 IC 6106

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
	N/A	N/A	N/A	N/A	N/A	N/A	N/A

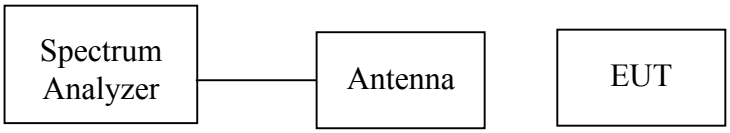
Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

7. FCC PART 15.239 REQUIREMENTS

7.1 20 DB BANDWIDTH

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=10kHz, VBW = RBW, Span = 200kHz, Sweep = auto.
4. Mark the peak frequency and 20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

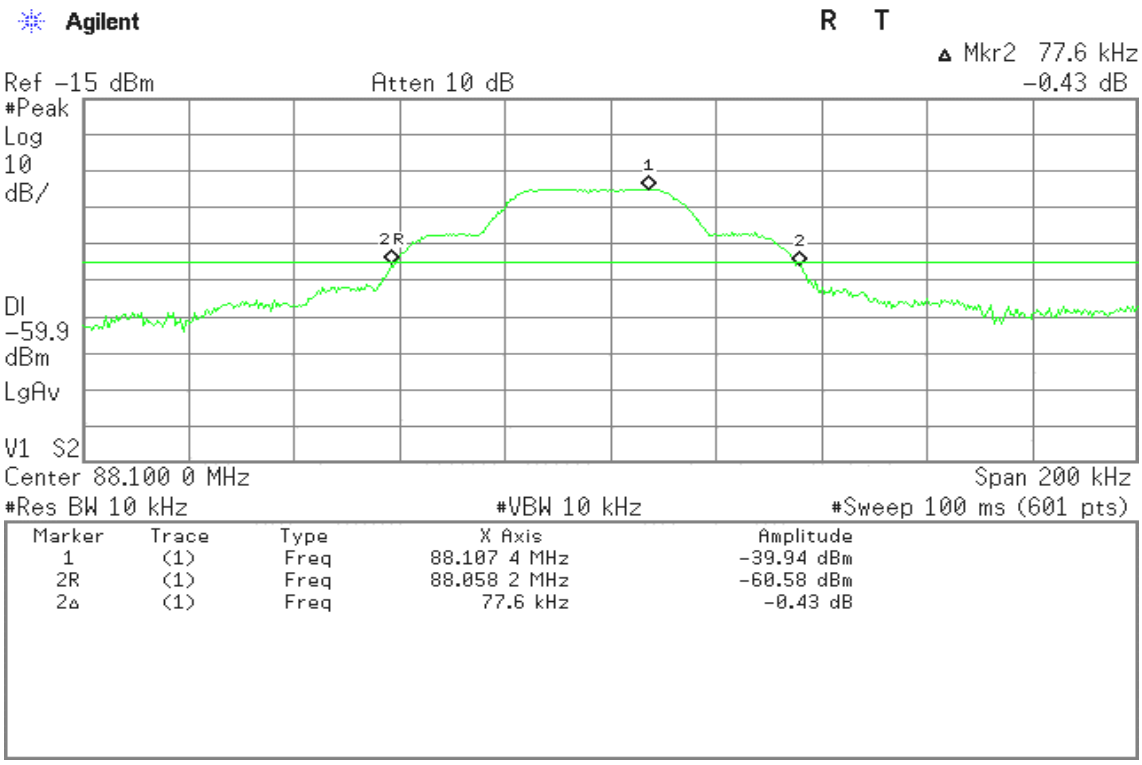
No non-compliance noted

Test Data

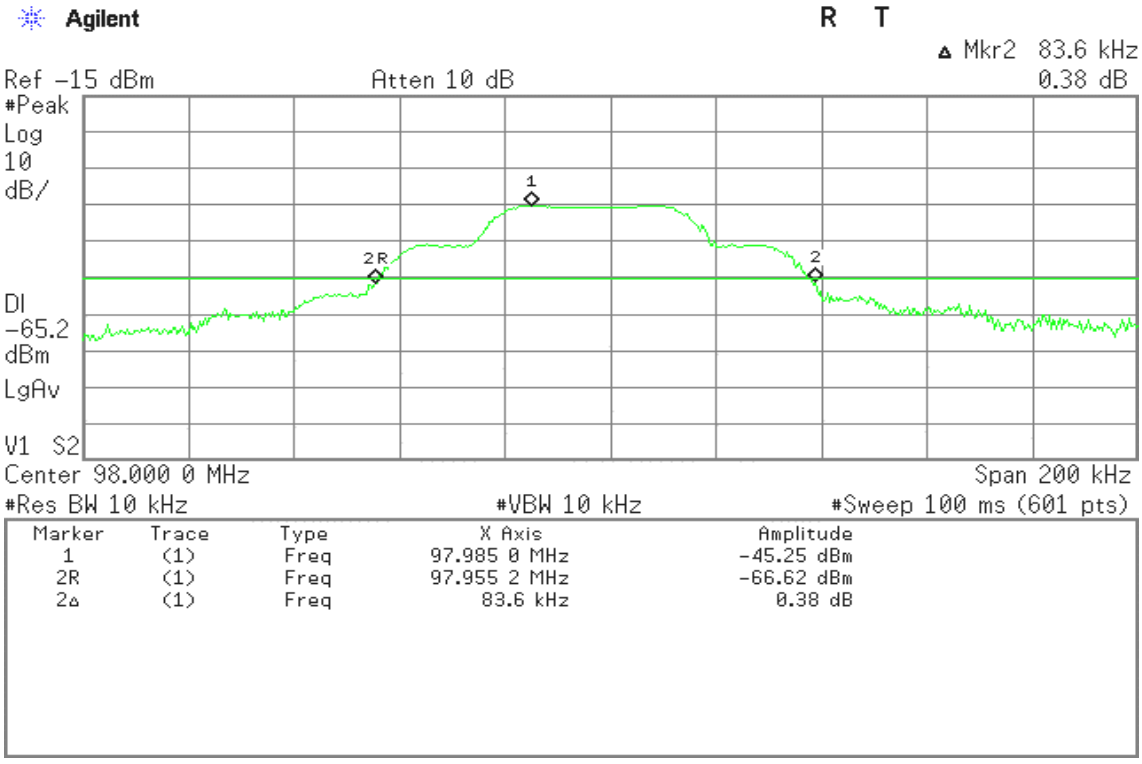
Channel	Frequency (MHz)	Bandwidth (kHz)
Low	88.10	77.6
Mid	98.00	83.6
High	107.90	90.6

Test Plot

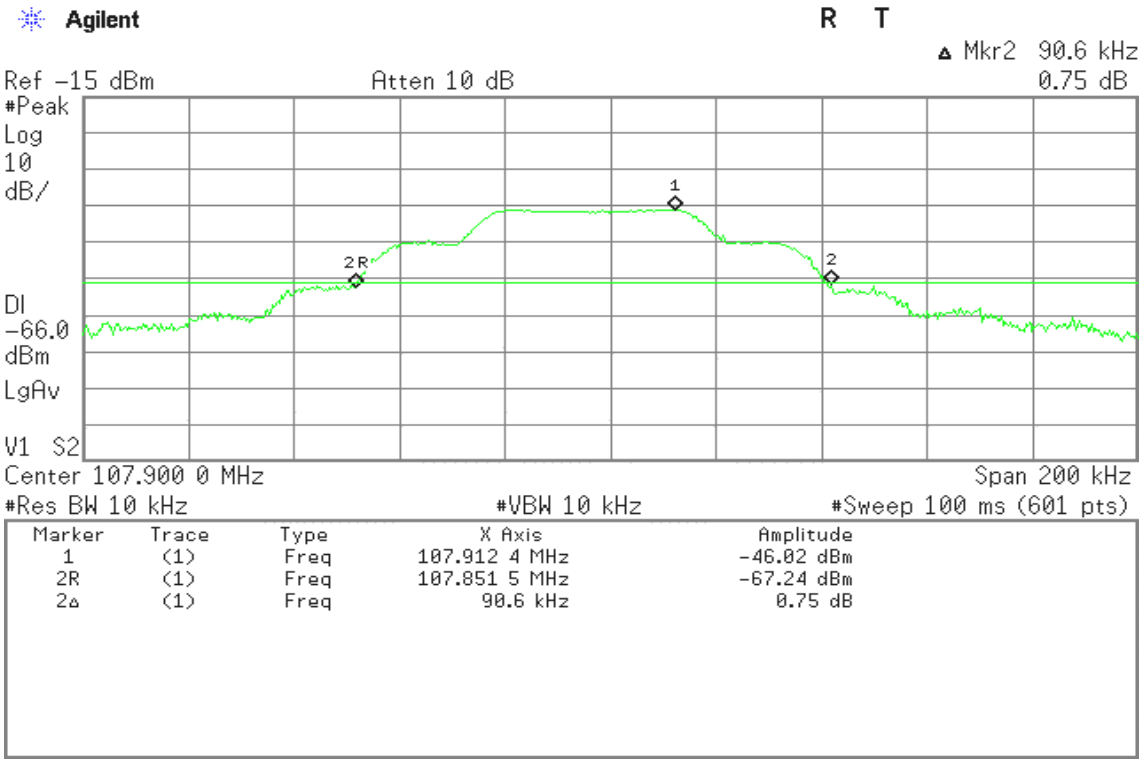
CH Low



CH Mid



CH High

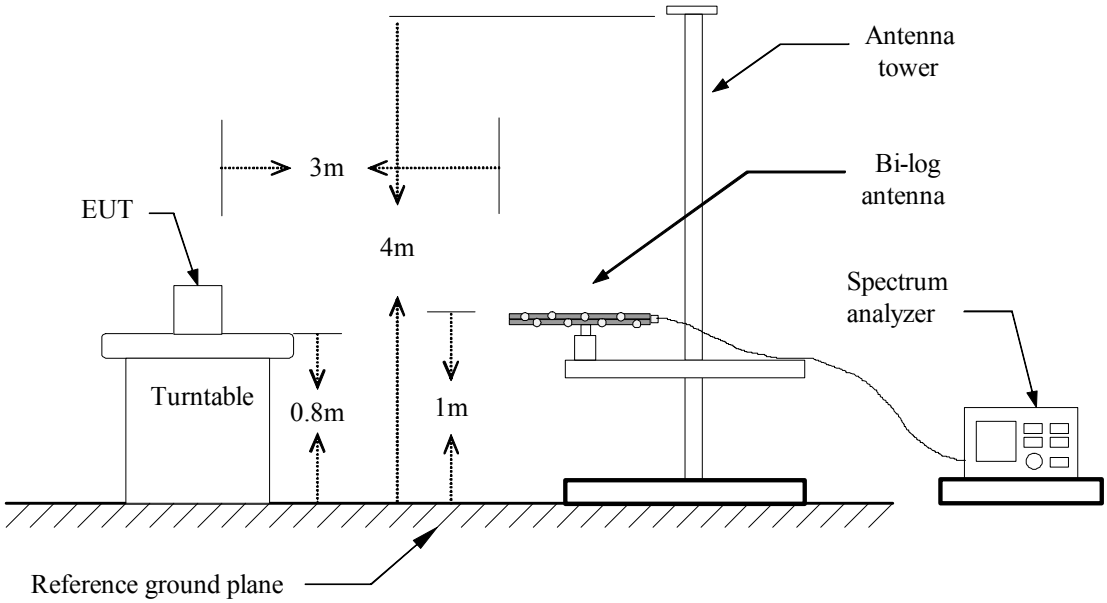

Agilent
R T
Mkr2 90.6 kHz
Ref -15 dBm
Atten 10 dB
0.75 dB
#Peak
Log
10
dB/
1
2R
2
Dl
-66.0
dBm
LgAv
V1 S2
Center 107.900 0 MHz
Span 200 kHz
#Res BW 10 kHz
#VBW 10 kHz
#Sweep 100 ms (601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 107.912 4 MHz -46.02 dBm
2R (1) Freq 107.851 5 MHz -67.24 dBm
2Δ (1) Freq 90.6 kHz 0.75 dB

7.2 BAND EDGES MEASUREMENT

LIMIT

According to §15.239(a), emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88-108MHz.

Test Configuration



TEST PROCEDURE

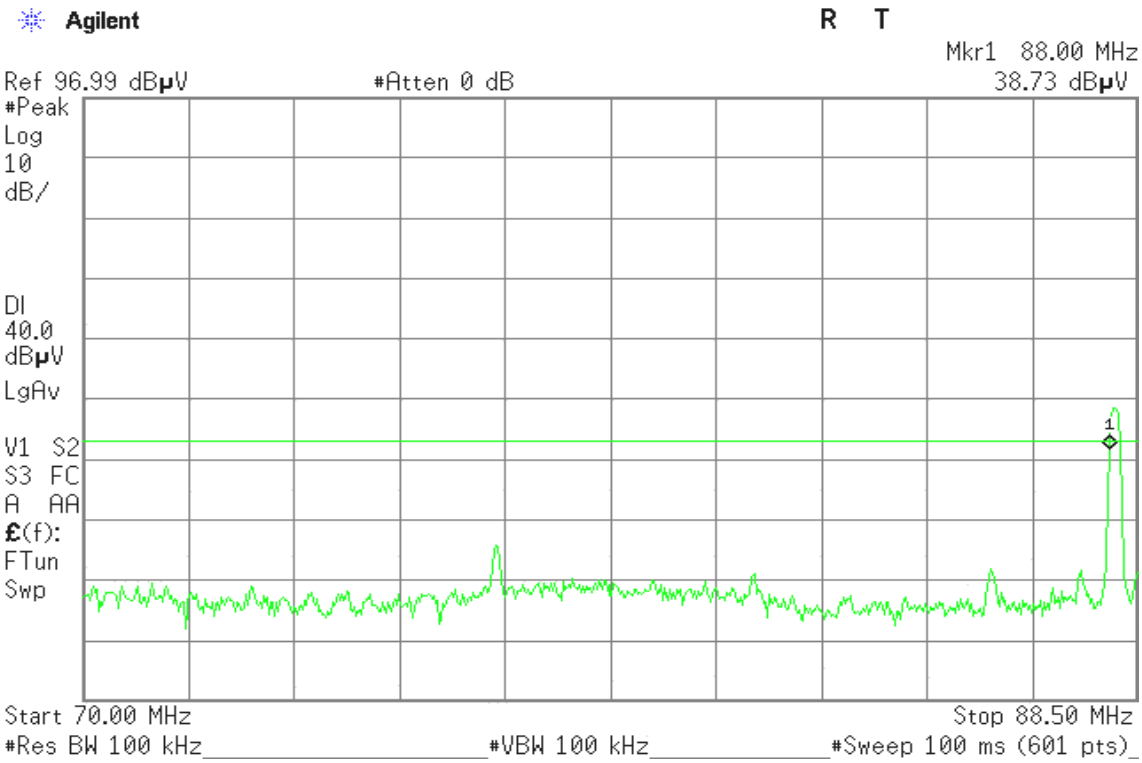
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal form an external generator.
2. Position the EUT as shown in figure 1 and measurement the turn on the EUT. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 10kHz and 100kHz respectively with a convenient frequency span including 200kHz bandwidth of the emission.
4. Mark the bandwidth of 200kHz points and plot the graph on spectrum analyzer.
5. Repeat the procedures until all measured frequencies were complete.

TEST RESULTS

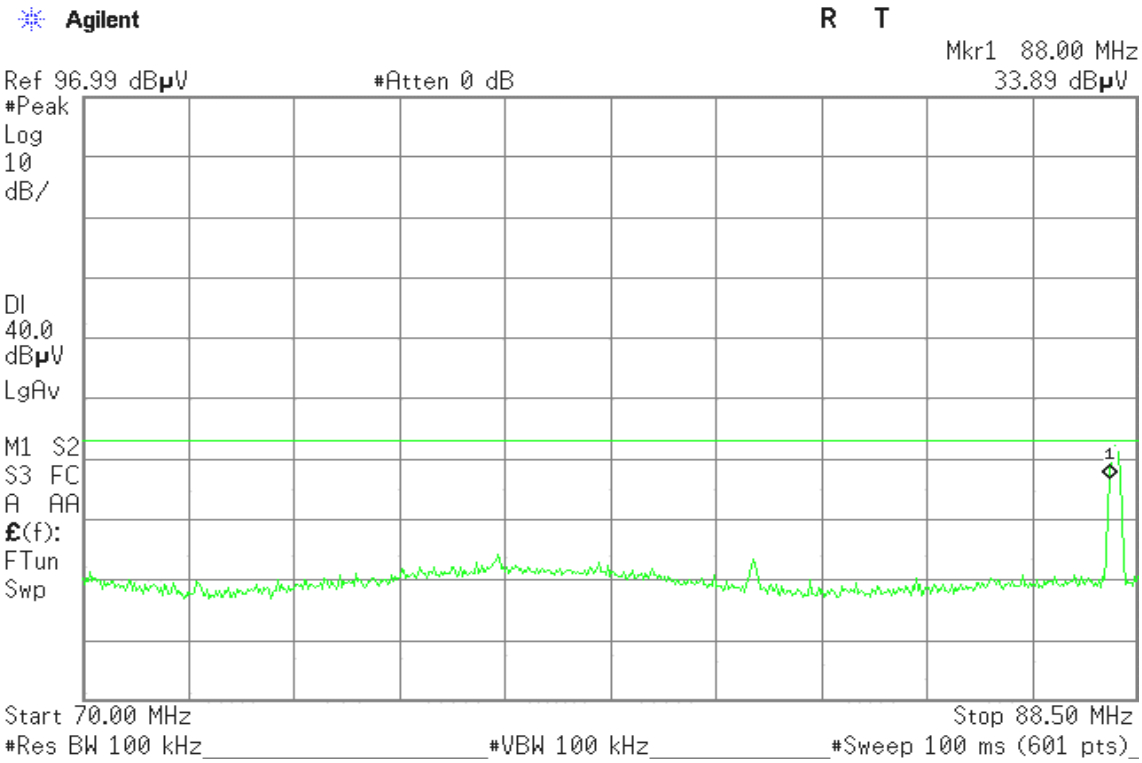
Refer to attach spectrum analyzer data chart.

Band Edges (CH Low)

Polarity: Vertical

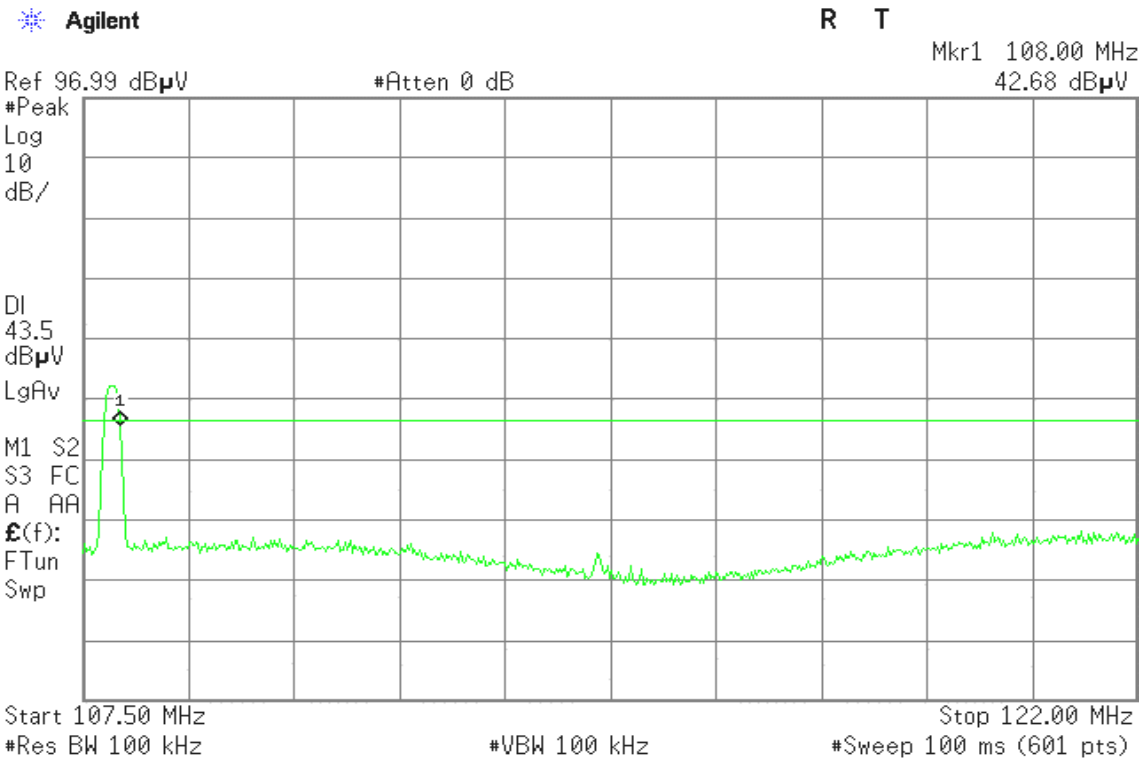


Polarity: Horizontal

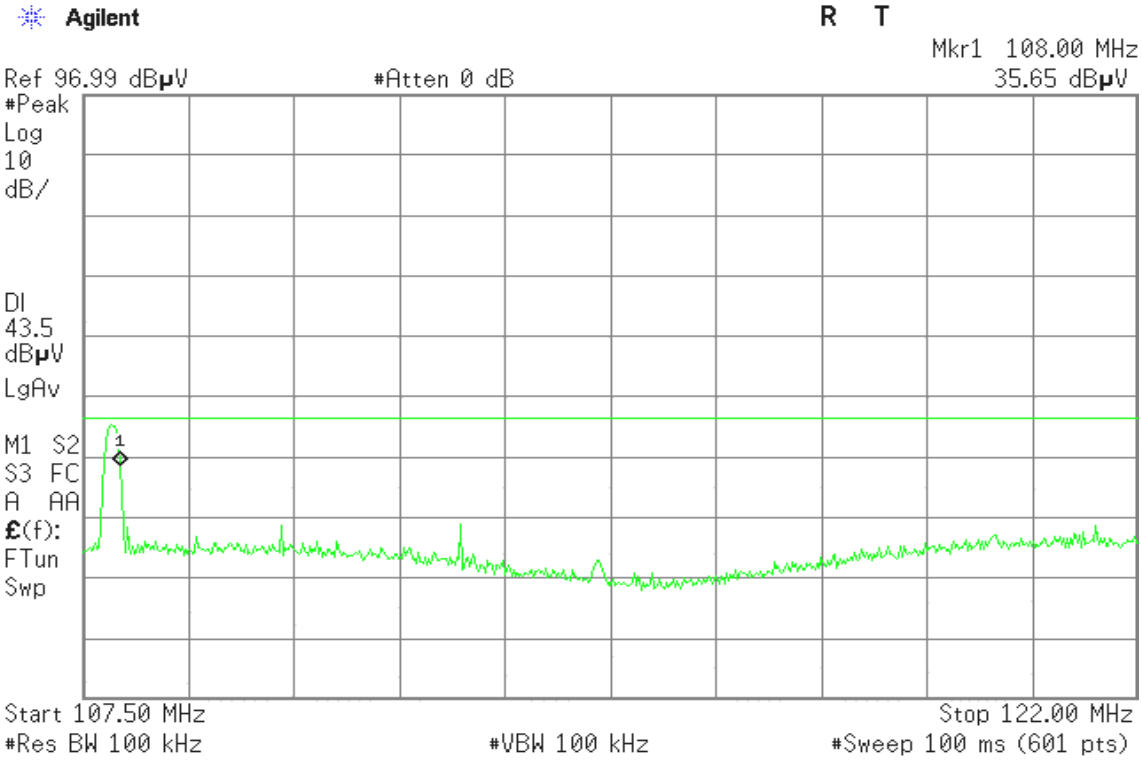


Band Edges (CH High)

Polarity: Vertical



Polarity: Horizontal



7.3 RADIATED EMISSIONS

LIMIT

1. The field strength of any emission within this band (section 15.239 frequency between 88 MHz –108 MHz) shall not exceed 250 microvolts /meter at 3 meters. (48dBμV/m at 3m) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.

   The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit), as below.

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
1.705-30	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

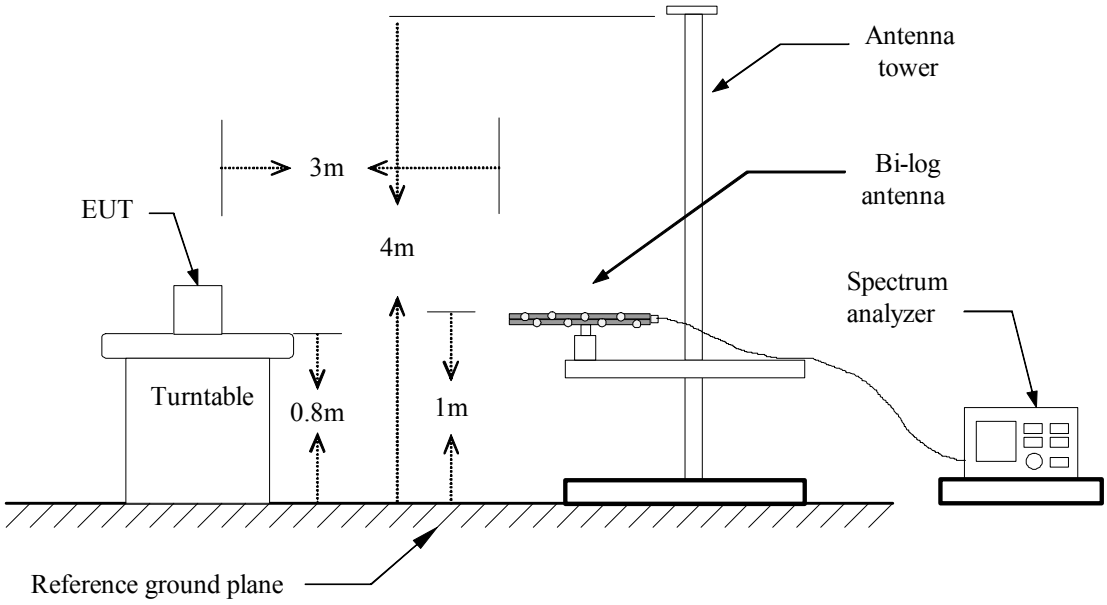
   Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

2. In the above emission table, the tighter limit applies at the band edges.

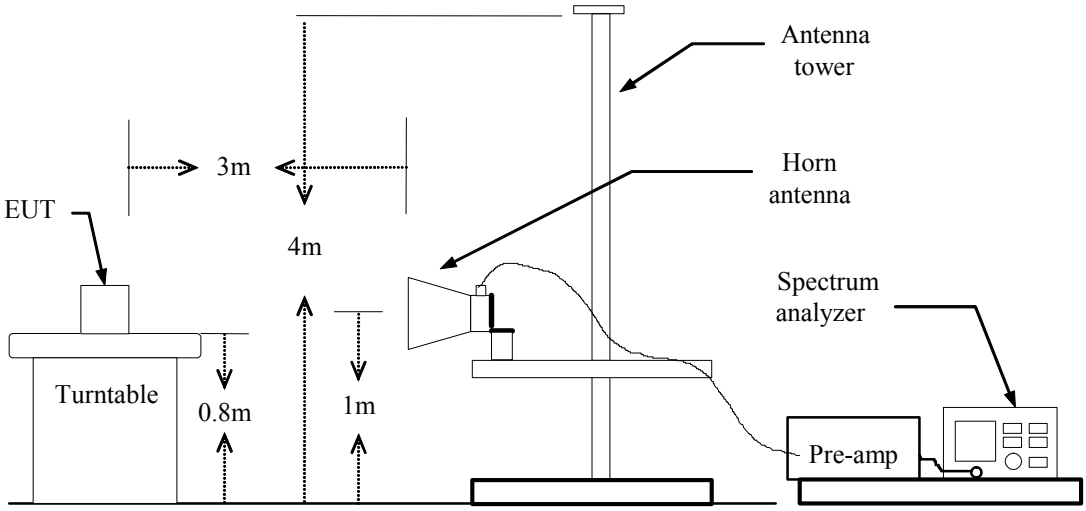
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
1.705-30	30	69.54
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

No non-compliance noted

Test Data

Operation Mode:	CH Low	**Test Date:**	March 8, 2008
Temperature:	25°C	**Tested by:**	Ryan Chen
Humidity:	50 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol (H/V)	Reading (Peak) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
88.10	V	69.51	-19.33	50.19	---	68.00	---	-17.81	Peak
105.98	V	40.69	-15.12	25.57	---	48.00	---	-22.43	Peak
120.53	V	37.64	-12.88	24.75	---	43.50	---	-18.75	Peak
264.42	V	37.04	-13.46	23.58	---	46.00	---	-22.42	Peak
440.63	V	41.26	-8.86	32.40	---	46.00	---	-13.60	Peak
616.85	V	35.87	-5.65	30.22	---	46.00	---	-15.78	Peak
784.98	V	31.71	-3.24	28.47	---	46.00	---	-17.53	Peak
88.10	H	59.10	-19.33	39.77	---	68.00	---	-28.23	Peak
105.98	H	41.98	-15.12	26.86	---	48.00	---	-21.14	Peak
122.15	H	36.59	-12.95	23.64	---	43.50	---	-19.86	Peak
144.78	H	36.40	-13.88	22.52	---	43.50	---	-20.98	Peak
264.42	H	40.20	-13.46	26.73	---	46.00	---	-19.27	Peak
351.72	H	33.98	-10.65	23.33	---	46.00	---	-22.67	Peak
440.63	H	44.59	-8.86	35.73	---	46.00	---	-10.27	Peak

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA from 30MHz to 1GHz was 100 kHz.*

Operation Mode:	CH Mid	**Test Date:**	March 8, 2008
Temperature:	25°C	**Tested by:**	Ryan Chen
Humidity:	50 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol (H/V)	Reading (Peak) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
98.00	V	64.94	-17.35	47.59	---	68.00	---	-20.41	Peak
122.15	V	37.10	-12.95	24.15	---	43.50	---	-19.35	Peak
157.72	V	37.83	-14.34	23.49	---	43.50	---	-20.01	Peak
190.05	V	35.31	-14.95	20.36	---	43.50	---	-23.14	Peak
293.52	V	36.60	-12.60	24.00	---	46.00	---	-22.00	Peak
356.57	V	33.10	-10.51	22.59	---	46.00	---	-23.41	Peak
458.42	V	32.73	-8.37	24.36	---	46.00	---	-21.64	Peak
98.00	H	53.61	-17.35	36.27	---	68.00	---	-31.73	Peak
120.53	H	37.87	-12.88	24.99	---	43.50	---	-18.51	Peak
131.85	H	36.10	-13.35	22.75	---	43.50	---	-20.75	Peak
202.98	H	34.46	-13.93	20.53	---	43.50	---	-22.97	Peak
266.03	H	35.80	-13.27	22.53	---	46.00	---	-23.47	Peak
293.52	H	39.50	-12.60	26.90	---	46.00	---	-19.10	Peak
392.13	H	36.05	-10.01	26.04	---	46.00	---	-19.96	Peak

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA from 30MHz to 1GHz was 100 kHz.*

Operation Mode:	CH High	**Test Date:**	March 8, 2008
Temperature:	25°C	**Tested by:**	Ryan Chen
Humidity:	50 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant. Pol (H/V)	Reading (Peak) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
107.90	V	64.17	-14.67	49.50	---	68.00	---	-18.5	Peak
120.53	V	38.90	-12.88	26.02	---	43.50	---	-17.48	Peak
148.02	V	38.39	-14.02	24.37	---	43.50	---	-19.13	Peak
201.37	V	34.00	-13.60	20.39	---	43.50	---	-23.11	Peak
266.03	V	34.89	-13.27	21.62	---	46.00	---	-24.38	Peak
430.93	V	35.47	-8.99	26.48	---	46.00	---	-19.52	Peak
539.25	V	33.05	-6.98	26.07	---	46.00	---	-19.93	Peak
107.90	H	58.54	-14.67	43.87	---	68.00	---	-24.13	Peak
133.47	H	37.33	-13.41	23.92	---	43.50	---	-19.58	Peak
186.82	H	35.66	-15.07	20.59	---	43.50	---	-22.91	Peak
266.03	H	36.51	-13.27	23.23	---	46.00	---	-22.77	Peak
324.23	H	39.08	-11.43	27.65	---	46.00	---	-18.35	Peak
430.93	H	38.47	-8.99	29.47	---	46.00	---	-16.53	Peak
539.25	H	32.92	-6.98	25.95	---	46.00	---	-20.05	Peak

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA from 30MHz to 1GHz was 100 kHz.*

7.4 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

***** *Decreases with the logarithm of the frequency.*

Test Configuration

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Operation Mode:	Normal Link	**Test Date:**	March 20, 2008
Temperature:	22°C	**Tested by:**	Snake Shan
Humidity:	45% RH		

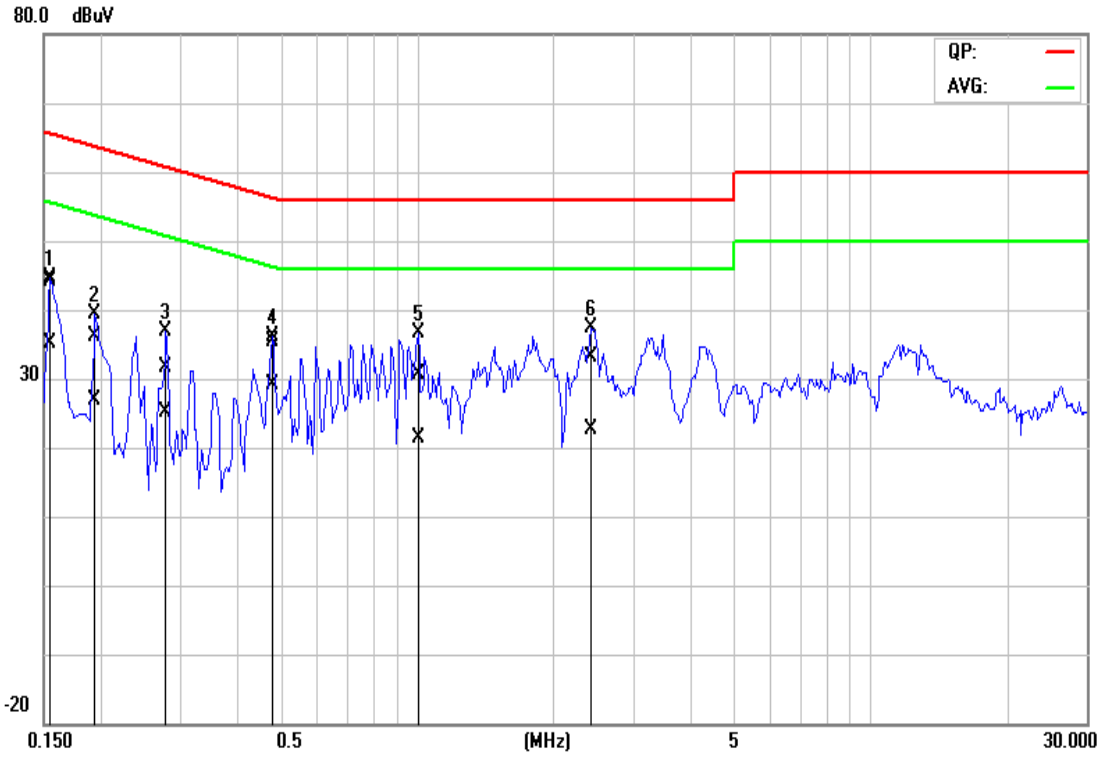
Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1550	44.05	35.05	0.15	44.20	35.20	65.73	55.73	-21.53	-20.53	L1
0.1950	36.09	26.69	0.11	36.20	26.80	63.82	53.82	-27.62	-27.02	L1
0.2800	31.62	25.12	0.08	31.70	25.20	60.82	50.82	-29.12	-25.62	L1
0.4800	35.39	29.09	0.01	35.40	29.10	56.34	46.34	-20.94	-17.24	L1
1.0050	30.70	21.40	0.00	30.70	21.40	56.00	46.00	-25.30	-24.60	L1
2.4150	33.18	22.68	0.02	33.20	22.70	56.00	46.00	-22.80	-23.30	L1
0.1600	41.45	31.95	0.15	41.60	32.10	65.46	55.46	-23.86	-23.36	L2
0.1950	33.59	23.19	0.11	33.70	23.30	63.82	53.82	-30.12	-30.52	L2
0.4750	32.79	25.59	0.01	32.80	25.60	56.43	46.43	-23.63	-20.83	L2
0.6050	29.90	21.00	0.00	29.90	21.00	56.00	46.00	-26.10	-25.00	L2
0.8450	31.00	22.10	0.00	31.00	22.10	56.00	46.00	-25.00	-23.90	L2
2.3450	29.88	21.58	0.02	29.90	21.60	56.00	46.00	-26.10	-24.40	L2

Remark:

1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)